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10/534,763	05/13/2005	Masako Tanaka	Q72976	8733
23373	7590	02/29/2008	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			MCCRACKEN, DANIEL	
			ART UNIT	PAPER NUMBER
			1793	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/534,763

**Applicant(s)**

TANAKA, MASAKO

**Examiner**

DANIEL C. MCCracken

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 5/13/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Citation to the Specification will be in the following format (S. # : ¶) where # denotes the page number and ¶ denotes the paragraph number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

### ***Formal Matters***

Applicants' preliminary amendment filed 5/13/2005 is acknowledged and will be entered.

### ***Information Disclosure Statement***

The Examiner has considered the relevance of all foreign patent documents insofar as the translated abstract indicates. "The duty of candor does not require that the applicant translate every foreign reference, but only that the applicant refrain from submitting partial translations and concise explanations that it knows will misdirect the examiner's attention from the reference's relevant teaching." *Semiconductor Energy Laboratory Co. v. Samsung Electronics Co.*, 204 F.3d 1368, 1378, 54 USPQ2d 1001 1008 (Fed. Cir. 2000).

The Examiner considers any and all documents cited against this case by a foreign patent office material to patentability and requests they be submitted. Appropriate translations are expected.

***Claim Rejections - 35 USC §§ 101, 112***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 13 and 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "hardly graphitizable" in claim 9 is a relative term which renders the claim indefinite. The term "hardly graphitizable" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. What if the Examiner found a reference that teaches, *in haec verba* "not quite, but still pretty closely non-graphitizable." Would the claim read on this? What would infringe Claim 9?

Claims 13 and 22-23 provides for the use of activated carbon, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 13 and 22-23 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a

process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims 24-27 employ definite articles (i.e. "the") to describe various articles. This language is usually employed to indicate that Applicants are referring to the article of a previous claim. Here, however, the previous claims (*if* Claims 24-27 are to be interpreted as dependent claims) do not recite slurries, pastes, plates, and the like. Furthermore, if these terms are supposed to recite physical properties, they are indefinite. They are interpreted as requiring nothing more than the composition of Claim 1.

Generally speaking, the Claims exhibit the defects common to foreign drafting and should be rewritten in proper US practice (i.e. no "use claims," proper antecedent basis, etc.).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The entire reference teaches each and every limitation of the rejected claims. The pinpoint citations provided are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found.

Claims 1-10, 13-14, and 24-33 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,937,223 to Yamaguchi.

With respect to Claims 1 and 4, Yamaguchi recites an activated carbon comprising an alkaline earth metal compound. (Yamaguchi 2: 35). Any number of BET surface areas within the claimed range are taught. *See* (Yamaguchi "Table 1"). As to Claims 2-3, calcium, magnesium and barium in their hydroxide and carbonate forms are taught. (Yamaguchi 2: 33-38). As to Claim 5, Yamaguchi necessarily teaches a "particle size" of 10  $\mu\text{m}$  or less. Yamaguchi adds the alkaline earth metal via aqueous solution, which reasonably suggests a homogenous mixture. *See* (Yamaguchi 2: 47 *et seq.*). This is the evidence tending to show inherency. As to Claim 6, the range is taught. (Yamaguchi 2: 41-43). As to Claims 7-8 and 10, Yamaguchi discloses pore sizes in the range claimed. (Yamaguchi 4: 29-31). This, along with the surface areas and reagents taught by Yamaguchi necessarily implies the properties claimed. As to Claim 9, whatever carbon is taught in Yamaguchi is expected to be "hardly graphitizable" for similar reasons. "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). With respect to Claims 13-14 and 24-27, these claims are being interpreted as requiring nothing more than the composition of Claim 1. If this is not the case and additional structural features were intended, this should be explicit in the claim language.

As to Claims 28-33, Yamaguchi teaches mixing the chemical activating agents and heat treating it at the claimed ranges. (Yamaguchi 2: 47 *et seq.*).

Claims 1-4, 7-15 and 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,414,837 to Sato, et al.

With respect to Claims 1-4, Sato teaches activated carbon with calcium carbonate. (Sato 7: 59-60). The claimed BET surface areas are taught. (Sato 7: 35-37). As to Claim 8, the pore sizes are taught. (Sato "Fig. 3"). As to claims 7-8 and 10, it is expected that Sato teaches the properties claimed, owing to the similarity of the activation agents and BET surfaces taught. Similarly, whatever was meant by Claim 9, it is expected to be taught by Sato – note the similar reagents and heating taught at (7: 38 *et seq.*). "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on *prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). As to Claims 11-12, a particle diameter of 30  $\mu\text{m}$  is taught. (Sato 8: 10-11). With respect to Claim 13-14 and 22-27, these claims is being interpreted as requiring nothing more than the composition of Claim 1. If this is not the case and additional structural features were intended, this should be explicit in the claim language. However, it is noted that Sato teaches electrodes and double layer capacitors. *See e.g.* (Sato 5: 19 *et seq.*, "Fig. 1"). To the extent Claims 22-23 can be interpreted as product by process claims, the process steps do not impart patentability. Sato teaches double layer capacitors. *Id.* That is all the claims require. It is also worth noting that whatever Applicants meant by this claim, Sato discloses electrolytic liquids (i.e. solutions). *See e.g.* (Sato 6: 35 *et seq.*) As to Claim 15, carbon fibers are taught. (Sato 8: 17).

As to Claims 28-33, Sato teaches a process for making activated carbon at the claimed temperatures with the chemical activation agents. *See* (Sato 7: 38 *et seq.*). There is nothing

remarkable about how the claimed activated carbon is made. To the extent Applicants intended Claim 29 to reflect the addition of a vapor, it does not read this way. It is expected any alkali metal vapors will evolve from the heat treatment of Sato, rendering the claim anticipated.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The entire reference teaches each and every limitation of the rejected claims. The pinpoint citations provided are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found. As to the rejection under 35 U.S.C. §§ 102/103, where the applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the Examiner may make a



rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. *See* MPEP 2112 III. (discussing 102/103 rejections).

As to the third *Graham v. Deere* inquiry, resolving the ordinary level of skill in the art, the Examiner resolves the level of skill to be high – presumably a PhD chemist or chemical engineer with extensive experience in activated carbon. The Examiner makes note of Applicants use of nanotechnology (i.e. carbon nanotubes) which itself is a highly developed and specialized field. The cross-disciplinary nature of this invention (activated carbon, nanotubes, electrodes, etc.) buttresses the finding that the level of ordinary skill in the art is high. Support for these findings can be found in any of the references submitted by Applicants on their IDS, or those of record.

Claims 1-10, 13-14, and 24-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 4,937,223 to Yamaguchi.

The preceding discussion of Yamaguchi accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. See above with respect to 102/103 rejections.

Claims 1-4, 7-15 and 24-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,414,837 to Sato, et al.

The preceding discussion of Sato accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. See above with respect to 102/103 rejections.

Claims 1-15 and 24-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,414,837 to Sato, et al.

The preceding discussion of Sato accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. With respect to Claim 5, to the extent Sato may not teach the claimed particle size, one of ordinary skill in the art would readily recognize a smaller particle as an obvious expedient to aid in dispersing the activating agent with the carbonaceous substance. It is noted that Sato recites “uniformly impregnate[ing]” the carbonaceous material. (Sato 7: 56).

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,414,837 to Sato, et al. in view of US 7061749 to Liu, et al., US 6,842,328 to Schott, et al., US 6,491,789 to Niu, US 6,454,816 to Lee, et al., and US 6,205,016 to Niu.

The preceding discussion of Sato accompanying the obviousness rejection *supra* is expressly incorporated herein by reference. It is emphasized that activated carbon with the claimed alkaline metals are taught as being useful for electrodes. As to the limitations regarding adding carbon nanotubes/fibers, the Examiner is taking official notice that the use of nanotubes and/or fibers in capacitors is old and known. In support of taking official notice (i.e. in making sure there is “substantial evidence” on the record), the Examiner provides the following:

- US 7,061,749 to Liu, et al. – (3: 38 *et seq.*) (noting the use of nanotubes).
- US 6,842,328 to Schott, et al. – “Abstract” (noting nanotubes as “capacitor enhancing,” activated carbon is also taught).
- US 6,491,789 to Niu – “Abstract” (teaching nanofibers as advantageous for the performance of the capacitor).
- US 6,454,816 to Lee, et al. – (4: 5 *et seq.*) (describing the effect of CNT surfaces on capacitance).

- US 6,205,016 to Niu – (6: 64 *et seq.*) (describing nanofibers as exhibiting electrical capacitance as well as providing a structural framework for the electrode).

Thus, for any number of reasons as noted above and elsewhere in the references of record, carbon nanotubes are taught as advantageous in electrode compositions. To the extent there is not ample motivation to add carbon nanofibers (which are known capacitors) to activated carbon (another known capacitor), “[i]t is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art.” *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted).

With respect to the specific properties, the diameters and aspect ratios claimed are unremarkable (i.e. the range covers just about every nanotube described in the art). Similarly, the surface areas described in the art. *See e.g.* (Niu ‘016, 14: 60). As to Claim 20, Niu ‘016 (among others) teaches that different amounts of fibers/nanotubes has an effect on any number of properties: density, resistance, capacitance, etc. *See* (Niu ‘016, 19: 20 *et seq.*, col 21-22 "Table"). Stated differently, nanotube content is a result effective variable, the optimization of which does not impart patentability. *See In re Boesch*, 205 USPQ 215, 219 (CCPA 1980). As to Claim 21, given the heat treatment describe by Niu, it is expected that "fusion bonding" occurs.

***Conclusion***

All amendments made in response to this Office Action must be accompanied by a pinpoint citation to the Specification (i.e. page and paragraph or line number) to indicate where Applicants are drawing their support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel C. McCracken whose telephone number is (571) 272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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